The role of EU Structural Funds in enhancing the emergence of regional innovations and innovation policies

Theoretical points of departure and some empirical findings

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Soile Kuitunen
Researcher (Pol. Sc.)
Group for Technology Studies
VTT
Espoo, Finland

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Abstract

The main objective of the EU Structural Funds programmes is to reduce the disparities in social and economic development between member states and regions. Resources are directed to actions that help bridge the gaps between the more and the less developed regions and which promote equal employment opportunities between different social groups. The Structural Funds thus work towards the more general goal of achieving economic and social cohesion in the European Union. One of the major priorities in the Funds programmes is research, technological development and innovation (RTDI).

This paper explores the relations between EU Structural Funds and regional research, technological development and innovation actions (RTDI) as well as policies. The aim of the paper is to shed light on these relationships from two different angles. Firstly the paper explores the different theoretical points of departure. These include regional innovation system-approach, multi-level governance approach, and implementation theory. Secondly, the paper points out to empirical observations concerning the effects of the Structural Funds on the regional RTDI actions and policies.

Based on the theoretical discussion explored in the paper, innovation policy may be conceived as (1) a multi-layer governance structure, in which (2) the special focus is laid on the role played by regional actors and authorities, and (3) a multi-phase process, in which the more general principles of implementation - concentration, programming, additionality and partnership - are to be taken into account. The study suggests the following hypotheses. (1) The role of the RTDI actions will continue to be highlighted in the Funds programmes. (2) The employment of the Structural Funds programmes will underline the role of regional innovation system and innovation policy. (3) The employment of the Structural Funds programmes will make the regional innovation policy more democratic and (4) more efficient.

1 Introduction

The main objective of the EU Structural Funds programmes is to reduce the disparities in social and economic development between member states and regions. Resources are directed to actions that help bridge the gaps between the more and the less developed regions and which promote equal employment opportunities between different social groups. The Structural Funds thus work towards the more general goal of achieving economic and social cohesion in the European Union. One of the major priorities in the Funds programmes is research, technological development and innovation (RTDI). EU emphasises the RTDI as an increasingly important intervention measure in the common regional and cohesion policy.

The Funds indicate an appreciable financial support for the lagging regions as well as for regions suffering from the structural changes and regions in need for adaptation. The Funds have consistently grown in scope, size and coverage. In 1970, the share accorded to the Funds comprised three percent of the Community budget, whereas the equivalent share in 1990 was 28 percent and in 1997 as high as 32 percent (Pirkola 1998, 16). During the time period from 1994 to 1999 activities related to RTDI in the Structural Funds programmes amounted on average to almost six percent of the expenditure. In Finland, the assessed share to RTDI within the same time period varied from 13 percent to 17 percent, depending on the programme. At large, it is estimated that RTDI related expenditure in the Funds programmes in 1994-1999 was 8.5 billion ecu. (Second European Report on S&T Indicators 1997)

Despite the central role of RTDI in the Structural Funds programs, there are only a few empirical studies that have investigated the relations between the Funds and RTDI in a systematic manner (see, however, CIRCA-report 1999; Commission 1998; Second European Report on S&T Indicators 1997). Studies on the effects of the Funds on regional innovation activities and policies appear to be limited and also biased due to the insufficient empirical evidence employed in them. Most country comparisons are based on small amount of case studies, in which the focus is on evaluating the best practices carried out in different member states. There are only few studies that try to assess the quality and the impact of RTDI projects at the level of the projects co-financed by the EU Structural Funds. What is more, there is a dearth of empirical inquiries charting the role of the Structural Funds in strengthening the regional governance structures in particular policy sector, such as the RTD and innovation policies.

In order to fill some of the above-mentioned gaps, VTT Group for Technology Studies set up a research project in late 1999. The study addresses the following questions:

(1) The effects of the Funds programmes on regional RTDI actions
- What is the role of RTDI in the Finnish Funds programmes and individual projects co-financed by the Funds programmes? Are there any major differences between programmes in this respect?
- What is the impact of the Funds on the networks between firms, on the one hand, and between firms and research institutions, on the other hand?
- Do the Funds programmes meet the needs of organisations carrying out the projects and what kinds of deficiencies are inherent in the programmes?

(2) The effects of the Funds programmes on regional innovation policy
- What are the relationships between the regional, national and supranational authorities

implementing the programmes?
- Does the implementation of the Funds programmes result in changes in the Finnish innovation policy and innovation system?
- Do the Funds programmes support the emergence of regional innovation systems and policies?

The first question tries to capture the overall effects of Structural Funds on the emergence of regional RTDI actions by relying on divergent empirical data sets. As to the second major question of the study, the central task is to assess, whether the introduction of a new policy-instrument, The Structural Funds, will enhance and strengthen the emergence of regional innovation policy. Particularly interesting question is, whether the relations of the actors involved in the innovation policy are changed due to the implementation of the Structural Funds programmes. One may ask if the employment of a new policy instrument will result in more efficient, democratic and non-hierarchical governance structures regarding the innovation politics and policy. In addition, the study will chart whether the regional innovation system and innovation policy will be reinforced at the expense of the national innovation system and policy. The third major task in the project is to elaborate the quality and characteristics of individual projects co-financed by the Structural Funds. The aim will be at describing the characteristics of individual projects, such as their duration, financial resources as well as participants organising the projects.

It should be noted, however, that the study is able to assess the impact of Funds only to a limited degree since some of the effects are long-term and can not be scrutinised through cross-sectional data. Furthermore, the causal-dynamics (cause- and effects-relations) is mostly left unexplored due to the complex relations between the Funds and innovation actions and policies.

The data is collected through personal interviews with authorities and other actors designing and implementing the programmes. Furthermore, a survey questionnaire will be sent to the organisations carrying out the projects co-financed by the Funds programmes. The third database employed in the research project is a register consisting of projects in which there is a strong emphasis on RTDI. The scope of the empirical analyses is mostly limited to Finland, although some comparisons between Finland and other EU-member states will be made when appropriate.

In this paper, the focus will be on examining the research questions and the theoretical background of the study. Moreover, some results gathered in the previous research will be taken into account. The paper is organised as follows. The second part of the paper deals with the theoretical background of the study. The theoretical background consists of three different fundamentals, which nonetheless are inextricably linked. The first element is the concept of regional innovation system and innovation policy and politics. The second part of the theoretical discussion explores the basis of multi-level governance-approach, which is seen as a fruitful conception in studying the interactions and inter-dependencies between different levels of governance structures. The third section of the theoretical part deals with the implementation theory. Implementation is conceived as a multi-phase process covering all the phases from design of the programmes and regional development strategies up to the evaluation of the results. In this paper, the implementation process will be assessed through the community's regional policy principles. These include first and foremost concentration, partnership, programming, and additionality.

The third part of this paper tries to capture some overall effects of EU Structural Funds on enhancing the regional innovation policy and innovation activities by relying on the observations gathered in the previous research. The final part of this paper presents the concluding remarks.

2 Regional innovation systems, multi-level governance, and implementation theory: theoretical points of departure

There are several theoretical points of departure available for studying the relationships and interdependencies between the Structural Funds and RTDI actions. This study tries to comprise several theoretical concepts and approaches in order to shed light on the effects of the Structural Funds on the emergence of regional/local[1] innovations and innovation policies.

Innovations and innovation systems

Innovations and innovation policy are the core concepts of this paper. Due to the scope and aim of the paper, these concepts refer first and foremost to the innovations and innovation systems emerging at the regional level. The regional level is of great importance in providing the social and economic context for the RTDI actions and policies. We will utilise the view developed by such scholars as Lundvall and Johson (1994) who pinpoint the local embeddedness of the innovation actions. Localised or regionalised learning processes constitute the hard core of the emergence of innovations. But let us first consider the contents and interpretations of innovations.

There has occurred a radical change in the conceptualisations of innovation and those actions that result in the emergence of innovations. In the past, the emergence of innovations was considered a linear process, which started with the basic research, led to applications of the research results and ended up in new products or process innovations. Accordingly, public policy interventions were highly concentrated on the supply-side, mostly to strengthen the infrastructure such as research centres and universities undertaking basic research.

Later the interpretation of innovations and processes leading to the emergence of innovations has been profoundly changed. The new understandings of the innovations and innovation processes highlight several features. These include such as the following: (1) non-linearity, (2) interaction between different actors involved in the process, (3) regions, local milieus and institutional thickness, and (4) learning. All the above-mentioned factors are assumed to affect the emergence of radical or incremental innovations, on the one hand, or process or product innovations, on the other hand[2]. These ideas stem from the evolutionary perspectives on economic performance and growth developed such scholars as Nelson and Winter. Evolutionary theories of

[1] For the purpose of this paper, the concepts of a regional and a local context will be used interchangeably.

[2] This is a typical classification of the different kinds of innovations, elaboration of which is, however, outside the scope of this paper.

economic and technological change have replaced the determinist ideas about the linear model.

A linear model of the innovation was part of the Fordist era of industrial organisation and production. This type of production was based on formal, codified knowledge generated by RTD-actions, large firms and national systems of innovation. According to the linear model, scientific advances stem from the knowledge-producing sector and are directly and progressively transferred to the economic sector. In other words, it is assumed that by reinforcing the scientific and technological resources of a region economic growth will be automatically generated. By contrast, *non-linearity* refers to the fact that an emphasis on research does not inevitably result in the appearance of innovations. Technological innovations and their contributions to the economic growth are disturbed by discontinuities and nonappropriabilities (Asheim & Isaksen 1996, 7). Innovation may arise from complex feed-back processes between market place and firms, between various units of firms, between firms and knowledge-producers etc.

In addition to non-linearity, evolutionary approaches put the *interactions* between different actors at the centre stage. Although firms are the key elements in the emergence of innovation activities and innovations, they are dependent on other actors and their activities. In fact, there is a whole system of interconnected actors - small and large firms, technology policy actors, universities and research institutions as well as financiers - that are active in the process of knowledge production and transfer (see for example Kuhlmann et alii 1999, 11). These actors and links between them comprise an entity, which is usually called an innovation system.

Innovation system is constituted by the network of institutions in the public and private spheres whose activities and interactions initiate, import, modify and diffuse new technologies (Freeman 1987). Therefore, it is not only the actors that are relevant but also the relationships between them along with the processes related to producing, distributing and using economically useful knowledge (Lundvall 1992). Lundvall (1988) points out the importance of collaboration: "one important response to intensified competition is increased co-operation between firms aiming at sharing the tacit knowledge".

The following table illustrates some basic differences between a linear innovation model and an interactive, non-linear innovation model (Asheim & Isaksen 1996, 8).

Table 1. Characteristics of a linear and a non-linear innovation model.

	Linear innovation model	Non-linear model
Actors of importance	Large firms and the R&D-sector	Small and large firms, the R&D-sector, clients, suppliers, technical colleges, public authorities
Important inputs in the innovation process	R&D	R&D, market information, technical competence, informal practical knowledge
Geographical consequences	Most innovative actions (R&D) in central areas	Innovation activity more geographically widespread, but focused on manufacturing milieus
Typical industrial sectors	Fordist manufacturing	Flexible industrial sectors
Implications for regional policy	Promote R&D in less central areas	Develop regional innovation systems; link firms to wider innovation systems

Innovation system is usually regarded as evolving at the national level, but modern regional development theory, perhaps even more than evolutionary economic theory, pinpoints the importance of the regional or local aspects of this system. In his book "The Competitive Advantage of Nations" (1990), Porter argues that strategic factors promoting innovation and economic growth are a product of localised learning processes. The capacity of firms to organise fruitful linkages with their local and regional environment is a key element regarding their competitiveness and economic success.

According to Howells (in Asheim 1999, 10), "geographical distance, accessibility, agglomeration and the presence of externalities provide a powerful influence on knowledge flows, learning and innovation and this interaction is often played out within a regional arena. Camagni (1991, 8), in turn, emphasises that technological innovation is increasingly a product of social innovation, a process taking place both at the intra-regional level in the form of collective learning processes and through inter-regional linkages facilitating the firm's access to different, though localised, innovation capabilities. As Carlsson and Stankiewicz (1991, 115) argue, it appears more accurate to refer to a regional technology system than to a national one because "high technology density and diversity are properties of regions rather than countries. They are the results of local agglomeration of industrial, technological and scientific activities".

By relying on the previous discussion concerning the role of region and regional embeddedness in the innovation system (and policy), Kaufmann and Tödling (2000, 30) point out to the following factors and mechanisms:

(1) There are differences between regions as to their preconditions for innovations. These include such as qualifications of the labour force, education, research institutions, knowledge externalities and spillovers. What is of importance is the fact that not all the factors are mobile. This immobility gives certain regions advantages over others.
(2) Industrial clusters are localised, giving rise to networks and specific innovation patterns in regions.
(3) A common technical culture may develop in a local production system through collective learning, giving rise to an innovative milieu.
(4) Links between universities and firms and knowledge spillovers often lead to regional high-tech development.

(5) Regional policy is taking more active role in the innovation process. It provides innovation support through specific institutions and agencies.

In referring to the social and cultural factors underlying the economic performance, two distinct concepts are considered being of advantage. Maillat (1991) speaks about sociocultural milieu, whereas some other authors employ the concept of institutional thickness (Amin & Thrift 1994). Basically, both concepts stress the local and/or regional context within which network forms of organisations are embedded (see for example Gravenotter 1985), although there are some major differences between the terms. The milieu mostly fulfils the task of informal knowledge transfer through mobile labour, information links, supplier and customer links as well as through co-operations at the local and regional level. It is assumed to favour learning processes in the innovation process such as learning by doing and learning by using and interacting. (Tödling 1994, 71-72)

For the approaches stressing the role of *local milieus*, two main understandings for how space carries social meaning are to be detected (Hallin & Lundequist 1999, 5). Firstly, there is a large number of studies focusing on how dense inter-firm relations result in a localised capabilities of adaptation, change, innovation, or learning (see, for example, Asheim 1997; Maskell et alii 1998). Secondly, a more specific literature has emerged which maintains that the relations between firms are ultimately generated by the existence of local or regional innovative milieus (see, for example, Maillat 1991). In any case, there is a risk of circular reasoning adherent in the concept of local milieu: innovation occurs due to a favourable milieu, and a favourable milieu is what exists in regions where there are innovations (Storper 1995, 203).

In the regional development studies, the concept of *institutional thickness* refers to those social and cultural factors that constitute the hard core of economic success. In contrast with the studies employing the concept of local milieus, the literature relying on the institutional thickness emphasises the role of an multi-organisational capacity in the region or locality. This multi-organisational capacity constitutes a precondition for territorial competitiveness. (Hallin & Lundequist 1999, 3)

Amin and Thrift (1994, 14-15) suggest the following four factors, which contribute towards the constitution of institutional thickness. Firstly, there is the prevalence of strong and diverse institutions including firms, financial institutions, local chambers of commerce, training agencies, trade associations, local authorities, innovation centres, government agencies providing with premises, land and infrastructure, and business service associations. All these can provide basis for the growth of particular local practices and collective representations. Although the number and a variety of institutions are important conditions for the evolvement of institutional thickness, they are hardly the sufficient ones. Besides the prevalence of institutions there are three further factors that have to be taken into account.

The second factor, as expressed by Amin and Thrift (1994, 14), has to do with the high levels of interactions amongst the institutions in a local area. The institutions involved must be actively engaged and also conscious of each other, displaying high levels of contact and co-operation. These interchanges are often embodied in shared rules, conventions, and knowledge that serve to constitute the social atmosphere of a particular region.

The third factor, according to Amin and Thrift, is the development, which is a result of intensive interactions, of sharply defined structures of dominations and/or of patterns of coalition resulting in the collective representation. The fourth factor is the development of mutual understanding of the participants that they are involved in the common enterprise. This is usually embodied in commonly held industrial agenda that the collection of institutions both depends upon and develops. This agenda may be reinforced by other sources of identity, most especially various forms of socio-cultural identification such as gender, region, and ethnicity. Altogether, institutional thickness establishes legitimacy and nourishes trust among the participants. (Amin & Thrift 1994, 14-15) A conception elaborated by Cooke may be of advantage here. Cooke (1998, 9) describes the above-mentioned relationships as heterarchical, which a term is an opposite to a hierarchical. Heterarchy is the condition in which network relationships are based on trust, reputation, custom, reciprocity, reliability, openness to learning and an inclusive and empowering, rather than an exclusive and disempowering disposition.

In the most favourable conditions, the four factors constituting institutional thickness will result in six outcomes. First one is institutional persistence i.e. local institutions are reproduced. Second outcome is the creation and deepening of an archive of commonly held knowledge. Knowledge refers not only to codified but also to uncodified, tacit kinds of knowledge. The third outcome is institutional flexibility that is the ability and of organisations embedded in the certain regions to both learn and change. The fourth outcome has to do with the high innovative capacity that is not just specific to individual organisations but is the most common property of a region. The fifth outcome is the ability to extend trust and reciprocal relationships. The last outcome is the most common one and has to do with widely held common projects, which serve to mobilise the regions with speed and efficiency. (Amin & Thrift 1994, 15)

Barczyk and Heidenreich (1998, 440) make an important notion about the possible negative effects of institutional thickness. These authors maintain that institutional thickness may become an obstacle for institutional adaptability and renewal of industrial competitiveness. This may be due to existing training, research and funding facilities, which tend to stabilise the traditional patterns of industrial development.

One of the profound trends, which is inclined to affect the economy, is globalisation. Without going into details about the different interpretations of this highly contested concept, it will be sufficed here to note some trends influencing the role and strengths of regions in a globalising economy. One of the noteworthy perceptions is that regions and regional development strategies are becoming tied to and shaped by the complex process of globalisation, or - "a powerful corporate interests organised on a trans-regional basis", as Amin and Tomaney (1995, 33) have put it.

For some scholars the concept of globalisation, as the compression and transgression of time- and space-barriers, pertains a greater salience to place. This is because of firms, governments, and the public, come to identify the special characteristics of localities - their labour force, the environment, administrations, entrepreneurs - as components for deriving competitive advantage. (Amin & Thrift 1994, 6; Keating 1998, 16)

To put it more simply, globalisation does not imply the sameness between places and localities, but a continuation of the significance of territorially bound diversities and differences. Amin and Thrift (1994, 9) accent the continued salience of places as

settings for social and economic existence as well as for forging identities, struggles, and strategies of both a local and global nature. Regions may be conceived as "...a medium and outcome of social interactions, as places in which lives are constituted and lived through, as arenas in which distinctive meanings are produced and contested" (Thrift 1983). As to the role of regions and localities in business, it is assumed that as economic co-ordination becomes increasingly globalised, the key interactions among firms in specific industry clusters become regionalised (Cooke 1998, 5).

The concept of institutional thickness is of significance in the global economy, too. Amin and Thrift (1994, 16) argue that the economic success of regions and localities in a global economy will increasingly depend upon the articulation between institutional thickness and economic variables which in turn make it worthwhile for industry to remain in a particular region. Nonetheless, only a minority of localities has enough institutional capacity in order to find such an economic integrity in a globalised world.

Turning to the empowerment of regional innovation system and actors, the employment of the Structural Funds, however, does not mean withering away the national innovation system. On the contrary, there are several actors and organisations taking part in the innovation policy at the local, regional, national and supranational levels. Innovation policy structure may be conceived as a multi-layer governance structure within which there is a multiplicity of actors aiming at diverse objectives through varied measures. Although regional authorities have been charged with responsibility for drawing up plans for the use of the national shares of EU Structural Funds, the state level authorities still bear some significance in the implementation of the programmes and in the allocation of resources. Although the state level authorities and actors have to a certain extent lost their gate-keeping role, they have not in any event become insignificant in the formulation of the innovation policy. We will explore the basis of this kind of multi-level governance-approach in greater detail in the next section of the paper.

Multi-level governance-approach

As was noted in the earlier section, the innovation system and innovation policy may be conceived as a multi-level governance structure. Multi-level governance -approach[3] argues first and foremost that the sub-national tier is a governmental level of importance next to the national and European levels of governance (Hooghe 1996, 18). There are two key assumptions in the MLG, which relate it to the decision-making processes in the European governance structures in general and the Structural Funds in particular.

Firstly, it is assumed that decision-making is shared by actors at different levels rather than monopolised by state executives (Hooghe & Marks 1997, 346). European institutions have shared responsibilities for decision-making and thus they have independent influence that can not solely be derived from national governments. Secondly, policy processes involve continuous negotiation among nested governments at several territorial tiers (Marks 1993, 392). Political arenas are seen as interconnected rather than nested. Sub-national actors are not merely nested within states; they also

[3] Another line of thought in conceptualising the Euro-polity is the neo-realist approach, according to which European policies has empowered state executives to concentrate control in their hands in the European and national arena (see, for example, Moravcsik 1994).

create transnational associations and network beyond the control of central state. It is nonetheless impossible to point to a dominant actor in the implementation process of the Structural Funds since the actors involved in the process are mutually dependent.

At large, proponents of MLG-approach tend to argue that through the partnership (see the next section of the paper) the EU Commission undermined the ability of national governments to determine structural policy outcomes at the implementation stage. Overall, this approach suggests that regional and local actors were both mobilised and empowered by the employment of partnership principle. (Bache & George 1999, 2)

The critics aimed to the MLG-approach stress the role of state and state interventions that have remained despite the processes of integration and globalisation. Regarding the Structural Funds, state actors have far from disappeared from the network of actors involved in the implementation of Funds programs. Some studies continue to emphasise the role played by central government when seeking to explain where the balance of power ultimately lies (For Great Britain, see, for example, Martin 1998; Bache 1999).

Smith (1998, 54-55) gives five series of reasons which enable state actors to “salvage“ something. These reasons are institutional, informational, intellectual, and symbolic. By institutional factors Smith refers to direct access of state actors to the institutional forums of the EU. The Structural Funds appear to deviate this pattern in some respects since it is the local actors and the agents of Commission that hold a considerable level of autonomy in implementing the Funds programmes. The greater control exercised by the Commission is evidenced by the continuing concentration of the Funds resources on certain priority objectives and areas of greatest needs. In addition, it is the Commission, not the member states or regions, which are to decide the criteria for establishing these priorities (Barnett & Borroah 1995).

The second asset of the state actors is the quality of the information sources. Civil servants are in direct contact with the persons in charge of the Directorates General. The permanent Representations at Brussels constitutes the second source of information. The selection and training of civil servants tend to favour the fastening of the diversity of data, which refers to the third set of factors, namely the intellectual assets. The last dimension is the symbolic one. In the case of Funds, state actors may refer to national interests as means to get their priorities through.

The principles of implementation in EU's regional policy

As was already noted in this paper, EU Structural Funds are the major vehicle in implementing EU's regional and cohesion policy. They aim at promoting economic and social cohesion in the EU member countries by targeting resources at actions that help to reduce the disparities in socio-economic development between regions and member states. There are three Structural Funds: (1) the European Development Fund, which was set up in 1975 and grants aid for projects aimed at reducing regional imbalances; (2) the European Social Fund, which supports a number of training and retraining programmes, and (3) the Guidance Section of the European Agriculture Guidance and Guarantee Fund.

Since the 1988 reform[4] the Structural Funds programs are to be implemented in accordance with the following principles: (1) concentration, (2) partnership, (3) programming, and 4) additionality. In order to be as efficient as possible, the Structural Funds are to concentrate on a few major objectives. During the program period from 1992-1999, the Structural Funds aimed to support six priority objectives: objective 1: undeveloped areas, objective 2: regions in industrial decline, objective 3: long-term unemployment, objective 4: youth employment, objective 5a: adaptation of agricultural structures, objective 5b and 6: development of rural areas. These objectives and geographical areas in which the particular objectives (1, 2, 5a, 5b and 6) are carried out are defined according to certain principles such as the per capita GPD and the level of employment[5].

In the 1988 Structural Funds reform, the central idea was to aid the indigenous economic development by involving actors with knowledge of the particular local and regional problems. Ever since this principle has been called a partnership. Partnership refers to a set of rules and procedures, which prescribe that the European Commission, national authorities and sub-national authorities collaborate closely, continually and systematically in the design and implementation of EU co-financed programmes. All stages in the implementation process of the programs should involve partnership between the relevant supranational, national, regional and local authorities. The partnership arrangements in regional policy represent the most sustained and the most comprehensive effort to bring together policy actors at different levels of governance. (Hooghe 1996, 2 & 7)

Partnership not only involves relationships between EU commission and national governments but also the interactions between them and territorial authorities beneath the national and supranational level. The major administrative expression of partnership has been the establishment of monitoring committees, which entail subnational representatives as well as representatives of the Commission and national government in order to formulate, manage and assess regional programmes within broadly defined guidelines (Hooghe & Marks 1996, 78).

What is of relevance here is that the content of the partnership in many Structural Funds programmes has moved beyond a formal mechanism for consultation and co-ordination. Partnership now represents a profound multi-organisational capacity, which is able to extend beyond the remits of Structural Funs actions. (Kelleher et alii 1999, 2) It understandably alters the traditional gate-keeping role of national governments between domestic and European politics. Nonetheless, the traditional role of national

[4] 1988 reform marked a turning point in the EU's regional and cohesion policy. Not only did it entail a notably expansion of the amount of financial resources allocated for the member states but it also established new procedures and principles for these allocations.

[5] In the Agenda 2000 reform, some changes in the Structural Funds programmes were made. Since this paper focuses on the preceding program period running from 1994 to 1999, the new Agenda 2000 will be very shortly described. Within the Agenda 2000 reform, the number of the objectives was decreased from seven to three. The rationale for reform was to make regional and cohesion policy more efficient. The emphasis is put on the lagging regions (objective 1), covering those regions with GPD 75% or less of the EU average and with high unemployment. Two other key areas are regions facing structural adjustment (objective 2, applied to both urban and rural areas), and regions in need of adjustment in terms of human resources. The latter refers to regions that require help to adapt their education, training and employment systems.

governments as gatekeepers between domestic and EU politics is not totally altered as a result of the partnership.

As to the third principle, individual projects should pursue more extensive goals, which in turn are aggregated into development programs set up usually for five-year periods. The employment of this principle involved a shift from project-based assistance to program-assistance and decentralised management. The reform accentuated the more continuous regional development instead of the ad hoc-approach, which previously prevailed. In Finland, for example, the employment of programming principle has meant a considerable shift in the regional development policy from a diffused approach to a more systematised development policy.

With reference to the fourth principle, the Funds should have an additional impact in the regions and result in at least an equivalent share in the total volume of official or similar structural aid in the member states. Two distinct aspects in the additionality may be differentiated: financial and output additionality. The first aspect refers to the genuine need of support, whereas the latter refers to the value added by programmes and projects supported by the Funds. Notwithstanding, additionality is a vague concept open to diverse interpretations. This vagueness, in turn, makes it difficult to discern whether the principle was satisfied or not. (Bristow & Blewitt 1999)

Moreover, the Structural Funds programmes should be consistent with local, regional, national and Community policies. Gender equality and sustainable growth are mentioned as the additional goals that should be taken into account when carrying out the programs.

To sum up the theoretical discussion presented in this section, the innovation policy may be perceived as (1) a multi-layer governance structure, in which (2) a special focus is laid on the role played by regional actors and authorities, and (3) a process, in which the principles of concentration, programming, additionality and partnership are to be taken into account. In the following section, we will turn to the effects of Funds on RTDI actions and policies and explore these in a more detailed manner.

3 EU Structural Funds as an instrument in enhancing the emergence of regional innovations and innovation policies

RTDI actions in the Structural Funds

As to the role of RTDI sustained by the Structural Funds, research and technological development have increasingly begun to be conceived as instruments serving a wider goal of competitiveness and social well-being. Earlier, the Funds aimed at supporting regional catching up without an explicit recognition of the role of RTDI in this process. Very few RTDI-linked activities were co-financed by the Structural Funds before the year 1988: less than 200 million ecu were devoted to these kinds of actions. It was not until the Funds reform 1988 RTDI actions appeared amongst the priority measures which were to be supported in the least favoured regions. (Research and Regional Development 1998). A major argument justifying the inclusion of RTDI actions in the Structural Funds operations was that of technology gap between advanced and less

advanced regions of the EU (Evaluation of Research, Technological Development and Innovation related actions under Structural Funds, objective 2, 1999, 3)

There is also a discernible shift in the locus of the RTDI activities supported by the Funds. From 1989 until 1993 the majority of RTDI measures focused support on science and technology actions, with innovation playing a very limited role in most of the countries. During this time period the primary aim was to strengthen the RTDI infrastructure. Considerable number of member states employed this strategy in order to improve the regional capacity in science and technology by advanced infrastructure and at fostering the development of human capital. According to some country-specific evaluations, these measures aimed at improving the basic infrastructure, or the supply-side factors, had overall positive effects. (CIRCA 1999, 35; European Commission 1998; Evaluation of Research, Technological Development ... 1999, 33)

The focus of the activities co-financed by the structural funds was drastically changed during the time period from 1994 to 1999. The objectives evolved more towards underpinning enterprise involvement in RTDI, promoting technology transfer, networking (predominantly for SMEs), promotion of innovation and stimulation of demand. From 1994 onwards there has been an increasing shift in favour of innovation. In fact, innovation has become the dominant category of action in objective 2 areas. It is assumed that by funding RTDI-actions regions are helped to develop critical mass in terms of RTD potential essential for their production structure to be modernised and diversified. (Commission 1998; Sixth periodic report on the social and economic situation..., 44-45). The rationale for the shift in locus is to be found on new understandings of the innovations and innovation processes. One of the basic assumptions in the non-linear innovation model presented earlier in the study is that an increase in RTD-support does not inevitably generate economic growth and well being in the regions.

Accordingly, public policy measures have been changed. Formerly, there was a strong emphasis laid on the supply-side factors in the innovation process; that is on the infrastructure and research centres undertaking basic research. Nowadays the role played by demand-side, proposed by or based on identified needs of firms, is considered critical. The aim of the policies is to maximise the spillovers from scientific and technological advances and to encourage their incorporation in the production process. (Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union 1999)

During the time period 1994-1999 the weight put on RTDI was highest in objective 2 areas: on average 12 percent of financial resources were allocated to these kinds of actions. This figure reflects the relatively higher level of development of the objective 2 areas in their R&D and innovations systems and their absorptive capacity for actions related to RTDI. (Second European Report on S&T Indicators 1997, 387; Sixth periodic report on the social and economic situation and development of the regions of the European Union 1998, 44) In fact, the recognition of RTDI was a main element for achieving the general objective of EU cohesion and industrial restructuring in objective 2 areas, whereas within the non-regional objectives (objectives 3 and 4) not any particular priority accorded to RTD-activities was made during 1994-1999 (Second European report..., 394).

As far as Finland is concerned, RTDI-activities concentrate on the objective 2, 4, 5b and 6, with the strongest RTDI emphasis being laid in the objective 2. According to Commission's estimation, approximately 13 percent of the Structural Fund budget was set aside for RTDI actions in 1995-1999 in Finland.

Turning to the empirical evidence regarding the impact of Structural Funds on RTDI actions, economic growth and well being, we may point to the following observations (CIRCA 1999; Ex Post Evaluation...1994; Second European ...1997; Tavoite 6-ohjelman väliarviointi, loppuraportti 2000, 31):

- Complementary actions taken by EU member states have not been adequate to maximise the Community added value from the Funds.
- The structural Funds have had a positive impact on the future growth capacity by the resources allocated to RTDI.
- There are considerable regional differences in the spread of assistance. For example, in Finland the assistance directed to the firms is highly concentrated on certain major cities and on areas growing fastest.
- The direct economic effects of the Funds are modest.
- The Structural Funds have had a significant leverage effect. According to an evaluation of the objective 2 programmes, for every ECU 1 million, around ECU 2 million was contributed by EU member states themselves.

The empirical evidence quite clearly indicates that the direct investments in RTDI are not necessarily the most appropriate way to tackle the technology problem. There should be more attention paid to the systemic features and linkages between technology, innovation, and knowledge. The absorptive capacity of the firms should be a more highlighted objective in the Structural Funds programmes.

The effects of the Structural Funds on the regional innovation policies

One of the most important questions is whether the introduction of a new policy instrument - the EU Structural Funds - results in changes in the governance structures in the member states and regions with highly diverse institutions, political practices, policies, problems and players. In this study, one of the main tasks is to assess whether the key principles in EU's regional policy - programming, concentration, additionality and partnership - make the innovation policy more democratic, efficient, and non-hierarchical. In so doing, we may begin with the views expressed by Hooghe (1998, 469). Hooghe discusses about the legitimisation of partnership principle, but some of the following arguments may apply to the principles of concentration and programming as well.

Firstly, there is the efficiency argument. Employment of the above-mentioned principles may provide a channel for affected interests to identify common problems and pool resources to supply collective goods. Second argument deals with the self-government. Partnership allows actors to govern themselves by pooling indigenous resources on a voluntary basis and co-ordinating their activities in non-hierarchical fashion. The third legitimisation factor is that the partnership principle gives weaker sub-national actors a stronger voice to demand solidarity. The last argument refers to the second and has to do with the democratisation effects of the partnership principle. In reality, as Hooghe

claims, the partnership has fallen short of expectations in almost all of the above-mentioned respects. According to Hooghe, only the assumption concerning the democratisation effects has gained some support on the basis of empirical observations.

Some countries and regions have employed strategies and build up governmental structures, which are highly bureaucratic, complex and inefficient. In an internal document on partnership, Commission concludes that instead of promoting self-governing networks of public and social actors, partnership often slides back into more conventional administrative and financial activities (Commission of the European Communities 1996). Management and co-ordination problems inherent at both national and regional level tend to reduce the overall effectiveness of the Funds. Marks' (1993, 407) notion on the overall restructuration of government and its effects is illustrative in this respect:

> "we are witnessing the emergence of multi-level governance in the European Community, characterised by co-decision making across several nested tiers of government, ill-defined and shifting spheres of competence (creating a consequential potential for conflicts about competencies), and an ongoing search for principles of decisional distribution that might applied to this emerging polity."

Turning to the innovation policy, potential hindrances for implementing a more decentralised policy may emerge from the following sources:

- The general characteristics of innovation policy and politics. Actors taking part in the innovation policy process tend to have divergent and contradictory interests (politics-aspect) and stress different measures aimed at attaining these objectives (policy-aspect).
- Lack of competence and resources among the sub-national administrators and authorities. The tasks attached to designing, governing and implementation of the Structural Funds programmes are demanding in terms of time and capacities. As Hooghe (1998) points out, the actors dealing with resource deficiencies may not get excited about the democratisation or solidarity-building effects of partnership or the merits of non-hierarchical governance structures.
- Lack of common RTDI-agenda among the regional actors.
- Lack of institutional thickness, which a concept refers to the paucity of divergent institutions and inter-institutional interactions and synergy, collective representation, solidarity, and shared cultural norms and values among the actors and organisations.
- There have been considerable difficulties in integrating private sector organisations such as firms into the partnership (Ex post evaluation..., 99).

The evaluation reports point out to the deficiencies inherent in the Funds programmes such as insufficient revenue finance to operate facilities, inadequate decentralisation of RTDI activities and an over-reliance in members states on EU funding. Quite importantly, some of the findings are highly critical with respect to overemphasis of the public supply sector at the expense of stimulating the private sector demand or participation. (CIRCA 1999, 35; European Commission 1998)

Moreover, there are process inefficiencies in all or some stages in the implementation including planning, management, co-ordination, monitoring and evaluation (CIRCA-report 1999, 5-6). In some regions, partnerships with a relatively small number of members may generally be more efficient and easier to manage. On the other hand, the drawback in these small groups may be the perceived exclusion of some organisations and actors from the politics and policy processes. Regarding the negative effects of

large partnerships, we may refer to the difficulties encountered in the management. Although more difficult to co-ordinate, the large partnerships have the advantage of ensuring a broadly based consensus towards the particular programmes and their implementation strategies. (Ex post evaluation..., 98)

Along with these critical views there are also more positive observations concerning the impacts of structural programming. Local community groups have been mobilised, local input into national government policy has been enhanced and local actors have sought greater control over local economic development. Decision-making has shifted to the regions at the expense of both the national state and local government. At a more informal level, in some countries the Funds programmes has energised sub-national government, thereby raising expectations and demands, modernising bureaucracies, and creating new communication channels for local and national authorities. (Hooghe & Marks 1996, 79-80) The following list encompasses several empirical observations concerning the effects of Funds programmes.

- Regions have become to develop regional innovation strategies and the more general stimulus to regional development policies has been strengthened due to the employment of Funds. The approach to RTDI at regional level has become more structured and more systematic as regions establish new institutional arrangements to support innovation, start-ups and technology transfer. Besides the catalytic impact of Funds on the emergence of innovation strategies, the Funds also provide with new tools for regional actors. At large, the methodicalness has been affirmed due to the implementation of the Structural Funds programmes.
- The principle of partnership has resulted in the more intense networking and collaboration between different actors involved in the RTDI actions and policies. Funds have created policy networks that encompass sub-national governments and private interests in individual regions (Marks 1992, 192). Accordingly, some authors argue that the Structural Funds have had a more visible effect on local or regional authority practices and procedures than on the economy of areas (Martin 1996).
- RTDI-component of the structural funds has made a profound contribution to the restructuring of the RTDI-systems in the least favoured regions. Nevertheless, funding has had much more effect on the utilisation of previously financed infrastructures than on the creation of new ones. (Second report... 1997, 390, 392)

In general, governance and management structures should be made more efficient and simple. There is a need to reduce the bureaucracy and complexity inherent in the programmes and their implementation. Slow moving administrative systems, complex application and legal procedures and requirements tend to delay the efficiency and effects of the Funds. (CIRCA 1999, 7) Commission report on S&T-indicators (1997, 398) stresses the role of the following fundamentals in making the regional RTDI-policy more efficient. Firstly, the absorptive capacity of the region should be strengthened. Secondly, the regional innovation policy should be complemented with a consistent economic and social policy. It is of importance to note that one can only increase the technological activity if there is a infrastructure, that is if the education system delivers high-level graduates and if industrial sector gets stimulated and organised. Thirdly, any regional policy should include a formal mechanism to promote the emergence of innovations and technology diffusion.

It is important to note that the regional empowerment is also dependent on the institutional, economic and political capacities that the regional actors hold as well as on

the social construction of a region by social forces. As the Commission's seventh annual report on the Structural Funds recognises (European Commission 1996, 229), the effective operation of the regional partnership in the context of the Funds is inconceivably influenced by the institutional and political diversity of the member states. The empowerment is thus a constant site of negotiation and re-negotiations regarding the terms of this construction (Lähteenmäki-Smith 1999, 18).

In order to describe the inter-state differences Tsipouri and Nauwelærs (1999) refer to two dimensions: the degree of maturity of the regional layer and the degree of influence of the national government. Firstly, all EU member states have some kind of regional autonomy, although the degree varies considerably. Globalisation changes the connections and networks between different actors, authorities, enterprises etc. It is widely recognised that proximity matters and the local or regional roots of actors and organisations are highly important in the global world and in the global competition. The second obvious trend has to do with the policy measures, especially the measures taken by EU that aim at empowering the regional authorities. Many EU countries appear to have adopted structures of regional autonomy due to social and politically imposed pressures.

Notwithstanding the degree of maturity, the degree of national government intervenes is related but not necessarily commensurable to the degree of regional autonomy. Some countries such as UK and France have offered the regional or the sub-national level authorities important degrees of freedom, but still want to exercise national control. In fact none of the countries, which have granted regional autonomy lately or reluctantly has eliminated national influence in its policies. (Tsipouri & Nauwelærs 1999) In general, it is obvious that the political impact of EU intervention on patterns of governance is highly dependent on local and regional interpretations of both Structural Fund norms or principles (programming, concentration and partnership) and of wider processes of decentralisation and state re-composition (Adshead & Quinn 1998).

In referring to innovation systems and policies, Tsipouri and Nauwelærs argue that it is not perhaps the empowerment of regional actors through legislative reforms than with better human and physical resources that help to strengthen the regional policy makers. Networking should not be considered as an aim itself but as a vehicle in enhancing the emergence of regional development and well being. It is clear, however, that the aim at enhancing the role of regional policies does not emerge with either the same time or evolve in the same pattern in the EU member states. Neither are the capacities of regional empowerment linear nor necessarily cumulative.

4 Concluding remarks

In this paper, the role of EU Structural Funds as instruments in enhancing the emergence of regional RTDI actions and regional innovation policies was explored. The paper addressed the following questions. (1) How are the regional innovation and RTD actions shaped by the implementation of the Structural Funds programmes? (2) How are the regional innovation system and innovation policy influenced and re-shaped by the employment of the Structural Funds programmes? These questions were explored by examining previous studies and reports. At a later stage of the research project, the

above-mentioned questions will be studied through extensive empirical databases gathered in Finland.

The starting points of the paper were the following. Firstly, the characteristics of the regional innovation system and policy were explored. Secondly, the paper relied on the multi-level governance -approach, which was conceived as a fruitful approach in studying both the governance structures of the Structural Funds and the contents and structures of the innovation policies. Innovation policy was considered a multi-layer governance structure, in which the local, regional, national and supranational actors and authorities tend to collaborate with each other. These actors are critically dependent on each other in terms of financial and other resources required in the implementation of the Funds programmes. The implementation of the Funds programmes was investigated by charting the contents of key principles. These principles or norms to be obeyed in the programmes include concentration, programming, partnership, and additionality. In reality, through the employment of partnership principle, the Commission undermined the ability of national actors to determine structural policy outcomes at the implementation stage. Decision-making competencies became more dispersed between actors at different territorial levels. (Bache & George 1999, 2)

Governance structures are increasingly contested and re-formulated by state and region specific translations of the decentralisation process (Bristow & Blewitt 1999) as well as by institutional arrangements and the share of power within the member states (see, for example, Adshead & Quinn 1998; Keating 1998). Despite the decentralisation trends inherent in the community's regional policy, the central governments have been able to maintain their gate-keeping role at least to a certain extent in the Structural Funds processes. Finland provides an illustrative example in this respect, since in Finland it is the civil servants either at the national or regional level which have a considerable amount of decisional power in the design and implementation of the Funds programmes. This holds true especially as far as the task of allocating money to individual projects is concerned.

Turning to the effects of the Structural Funds programmes on the regional RTDI actions, this paper relied on empirical findings gathered in previous studies and evaluation reports. On the basis of these observations and results, the following hypotheses may be formulated. They will be elaborated in the forthcoming stages of the research project.

(1) The role of the RTDI actions will continue to be highlighted in the Funds programmes.

Although RTDI actions have been an important Structural Funds priority throughout the twentieth century and are supposed to continue to be so for the foreseeable future (Helander 1999, 1), the focus in the RTDI actions co-financed by the Structural Funds programmes has changed. Formerly, the Funds assisted RTDI in terms of infrastructure. Since the 1995 the focus has been on technology transfer and the capacity building of the SME's to absorb technological knowledge. It is not clear, however, whether this shift on focus is actually discernible at the project level, that is, in the content and targets of individual projects co-financed by the Funds.

As to the impact of Funds programmes on the emergence of regional innovation policies, we may hypothesise the following:

(2) The employment of the Structural Funds programmes will underline the role of regional innovation system and innovation policy.

In any case, the focus on the regional innovation systems and innovation policies does not necessarily result in the withering away the national innovation system and policy. The capacity to strengthen the role of regional innovation system and policy is highly conditioned by the strong institutional presence not inevitably related to the Structural Funds programmes. There are other cultural and social factors such as the degree of inter-organisational action and synergy, collective representation by many bodies, a commonly shared industrial agenda, and shared cultural norms and values (Amin & Thrift 1994, 15), which are inclined to affect the regional policies.

(3) The employment of the Structural Funds programmes will make the regional innovation policy more democratic (4) and more efficient.

The Structural Funds have contributed to the emergence of strategic development plans at the regional and national level. This principle of programming along with concentration and partnership principles is thought to have made development policies more efficient. Nonetheless, some authors tend to highlight the bureaucratic and resource-intensive procedures inherent in the designing and implementation of the Funds programmes. These may set severe hindrances for the evolvement of efficient innovation policy, too. What is more, the decentralisation may possess other drawbacks which stem from the risk of overlap and duplication, on the one hand, and inefficiencies in policy delivery resulting from a lack of economies of scale and scope, on the other hand (Downes et alii 1999, 12).

In addition to, the profoundly divergent interests and aims of actors involved in the innovation policy process may result in inefficiencies in the implementation. Furthermore, a lack of competency and dearth of time and other resources required in the design and implementation of innovation policy may set severe hindrances on the emergence of the truly regional innovation policy. As Downes et alii (1999, 12) suggest, policies designed and implemented at regional level are not, in themselves, a guarantee of regionally appropriate policy. In fact, the availability of EU regional policy assistance has contributed to the evolvement of new styles of policy making at the regional and local level. The employment of Funds has strengthened the networking and collaboration among the different actors involved in the designing and implementation of the Funds programmes. There are supposed to be more links between firms and other actors involved in the RTDI actions due to the employment of the Structural Funds programmes.

Overall, the effects and impacts of Funds are highly dependent on a region's technological infrastructure - its system of education and training, its public and private research institutes and laboratories as well as networks and relations between these and SMEs. The concept of institutional thickness is of advantage in this respect. Institutional thickness refers not only to the prevalence of diverse institutions but also interconnections, dependencies, and relations between these institutions as well as to mutual understandings that actors and institutions are involved in a common enterprise.

In addition to, the historical tradition and the current state of regional autonomy and powers delegated to local and regional actors should be taken into account. Taken these factors into account, it is plausible to argue that the EU Structural Funds are a facilitating factor rather than an explanatory factor.

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